NATIONAL INSTITUTE OF TECHNOLOGY KARNATAKA
SURATHKAL, MANGALORE - 575 025

Course Code – CS254
Course Name – Database Systems Lab

Lab - 04
Date – February 23, 2022

Submitted To
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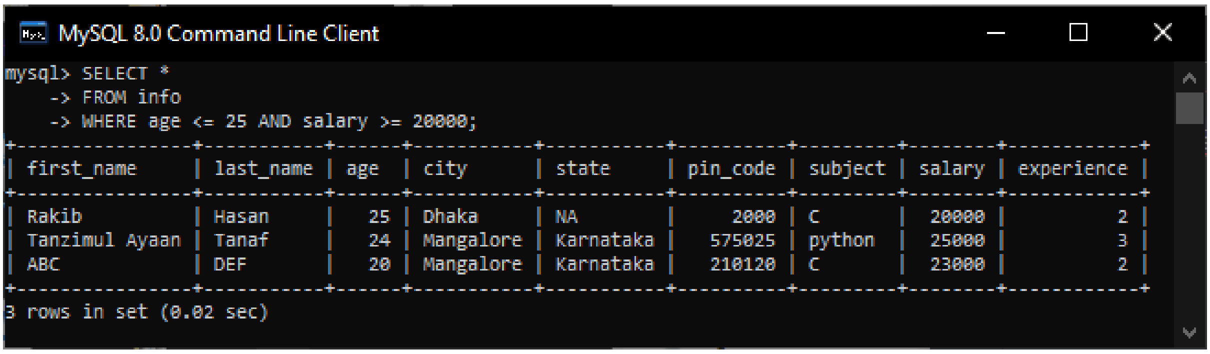
1. Create a db of lecturers with 10 tuples which consist of first name, last name, age, city, state, pin code, subject, salary and years of experience.

```
CREATE DATABASE IF NOT EXISTS lecturers;
USE lecturers;
CREATE TABLE info (
    first_name VARCHAR(255),
    last_name VARCHAR(255),
    age INT,
    city VARCHAR(255),
    state VARCHAR(50),
    pin_code INT,
    subject VARCHAR(50),
    salary INT,
    experience INT);

INSERT INTO info
    VALUES ('Rakib', 'Hasan', 25, 'Dhaka', 'NA', 2000, 'C', 20000, 2),
    ('Tanzimul Ayaan', 'Tanaf', 24, 'Mangalore', 'Karnataka', 575025, 'python', 25000, 3),
    ('Fabiha', 'Smrity', 26, 'Tangail', 'NA', 1950, 'dbms', 30000, 4),
    ('Abdullah', 'Al Mamun', 27, 'Kolkata', 'West Bengal', 202524, 'cpp', 22000, 1),
    ('Abdur', 'Rahim', 23, 'Bangalore', 'Karnataka', 552025, 'java', 19000, 2),
    ('Tanvir', 'Rahman', 28, 'Nagpur', 'Moharasto', 202478, 'javascript', 21000, 4),
    ('Attada', 'Ramprashad', 29, 'AA', 'UP', 275000, 'C', 19000, 2),
    ('Mansur', 'Ali', 35, 'Bangalore', 'Karnataka', 220020, 'Cpp', 20500, 7),
    ('ABC', 'DEF', 20, 'Mangalore', 'Karnataka', 210120, 'C', 23000, 2),
    ('IJK', 'LMN', 36, 'Mangalore', 'Karnataka', 225700, 'C', 27000, 2)
```

Write a query to find the salary where age <= 25 and salary >= 20000

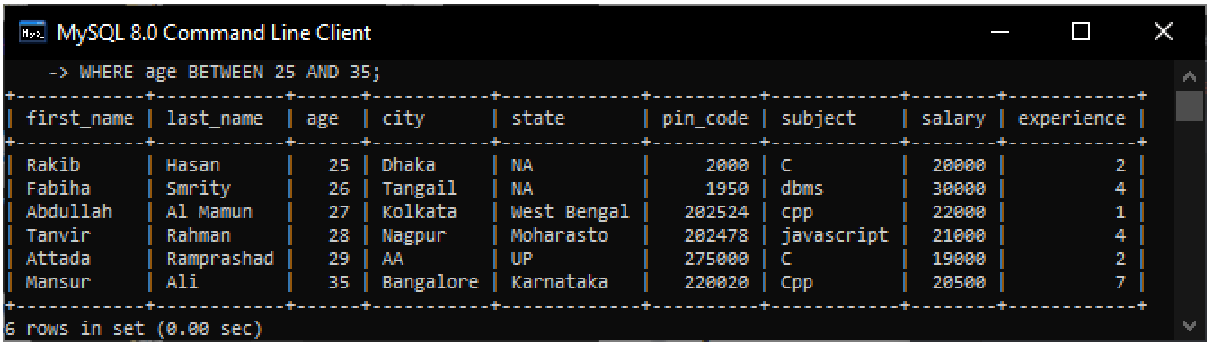
```
SELECT *
FROM info
WHERE age <= 25 AND salary >= 20000
```



```
mysql> SELECT *
    -> FROM info
    -> WHERE age <= 25 AND salary >= 20000;
+----------------+-----------+------+-----------+-----------+----------+---------+--------+------------+
| first_name     | last_name | age  | city      | state     | pin_code | subject | salary | experience |
+----------------+-----------+------+-----------+-----------+----------+---------+--------+------------+
| Rakib          | Hasan     |   25 | Dhaka     | NA        |     2000 | C       |  20000 |          2 |
| Tanzimul Ayaan | Tanaf     |   24 | Mangalore | Karnataka |   575025 | python  |  25000 |          3 |
| ABC            | DEF       |   20 | Mangalore | Karnataka |   210120 | C       |  23000 |          2 |
+----------------+-----------+------+-----------+-----------+----------+---------+--------+------------+
3 rows in set (0.02 sec)
```

Write a query to print the lecturers between the ages of 25-35

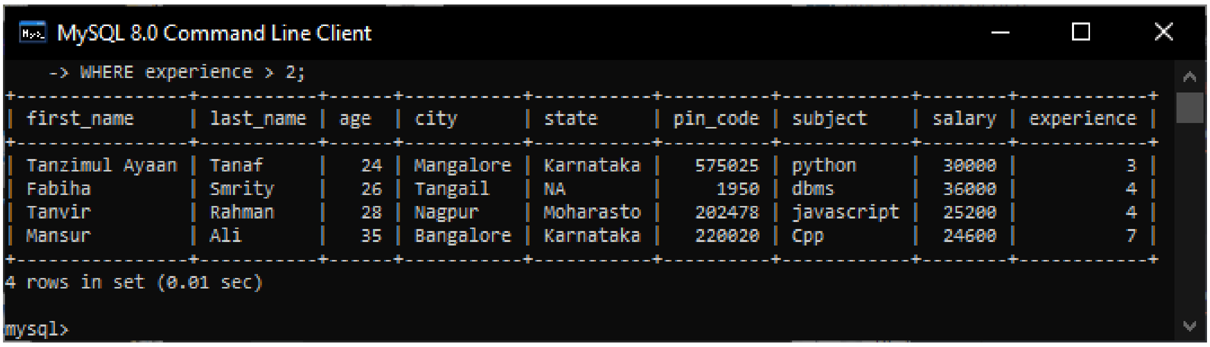
```
SELECT *
FROM info
WHERE age BETWEEN 25 AND 35
```



```
    -> WHERE age BETWEEN 25 AND 35;
+------------+------------+------+-----------+-------------+----------+------------+--------+------------+
| first_name | last_name  | age  | city      | state       | pin_code | subject    | salary | experience |
+------------+------------+------+-----------+-------------+----------+------------+--------+------------+
| Rakib      | Hasan      |   25 | Dhaka     | NA          |     2000 | C          |  20000 |          2 |
| Fabiha     | Smrity     |   26 | Tangail   | NA          |     1950 | dbms       |  30000 |          4 |
| Abdullah   | Al Mamun   |   27 | Kolkata   | West Bengal |   202524 | cpp        |  22000 |          1 |
| Tanvir     | Rahman     |   28 | Nagpur    | Moharasto   |   202478 | javascript |  21000 |          4 |
| Attada     | Ramprashad |   29 | AA        | UP          |   275000 | C          |  19000 |          2 |
| Mansur     | Ali        |   35 | Bangalore | Karnataka   |   220020 | Cpp        |  20500 |          7 |
+------------+------------+------+-----------+-------------+----------+------------+--------+------------+
6 rows in set (0.00 sec)
```

Check the experiences of a lecturer, if their experience is greater than 2 years increment their salary by 20%.

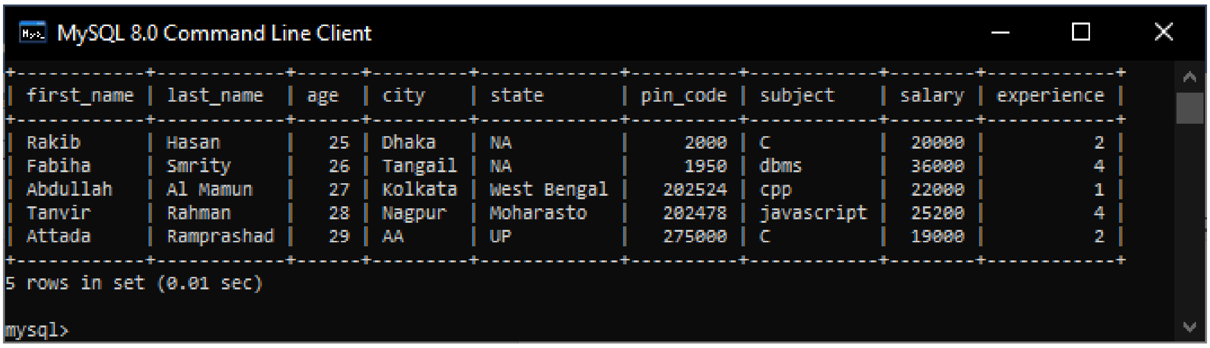
```
UPDATE info
SET salary = salary * 1.2
WHERE experience > 2;


SELECT *
FROM info
WHERE experience > 2;
```



```
    -> WHERE experience > 2;
+----------------+-----------+------+-----------+-----------+----------+------------+--------+------------+
| first_name     | last_name | age  | city      | state     | pin_code | subject    | salary | experience |
+----------------+-----------+------+-----------+-----------+----------+------------+--------+------------+
| Tanzimul Ayaan | Tanaf     |   24 | Mangalore | Karnataka |   575025 | python     |  30000 |          3 |
| Fabiha         | Smrity    |   26 | Tangail   | NA        |     1950 | dbms       |  36000 |          4 |
| Tanvir         | Rahman    |   28 | Nagpur    | Moharasto |   202478 | javascript |  25200 |          4 |
| Mansur         | Ali       |   35 | Bangalore | Karnataka |   220020 | Cpp        |  24600 |          7 |
+----------------+-----------+------+-----------+-----------+----------+------------+--------+------------+
4 rows in set (0.01 sec)

mysql>
```

List the names of the lecturers who are not from Karnataka.

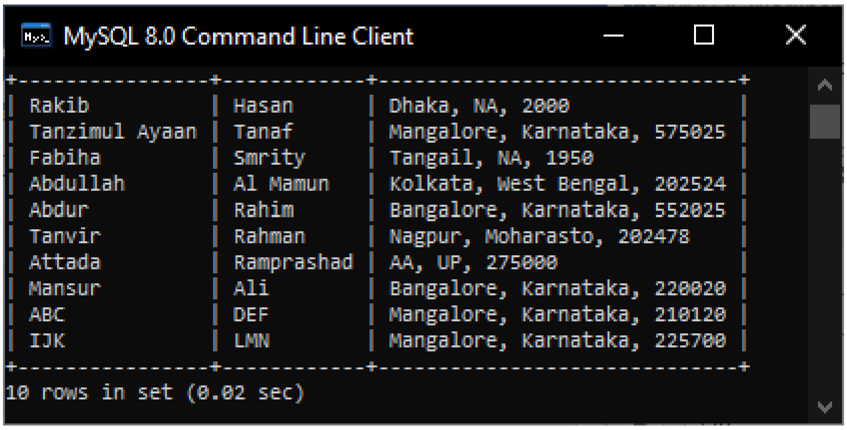
```
SELECT *
FROM info
WHERE NOT state = 'Karnataka';
```



```
+------------+------------+------+---------+-------------+----------+------------+--------+------------+
| first_name | last_name  | age  | city    | state       | pin_code | subject    | salary | experience |
+------------+------------+------+---------+-------------+----------+------------+--------+------------+
| Rakib      | Hasan      |   25 | Dhaka   | NA          |     2000 | C          |  20000 |          2 |
| Fabiha     | Smrity     |   26 | Tangail | NA          |     1950 | dbms       |  36000 |          4 |
| Abdullah   | Al Mamun   |   27 | Kolkata | West Bengal |   202524 | cpp        |  22000 |          1 |
| Tanvir     | Rahman     |   28 | Nagpur  | Moharasto   |   202478 | javascript |  25200 |          4 |
| Attada     | Ramprashad |   29 | AA      | UP          |   275000 | C          |  19000 |          2 |
+------------+------------+------+---------+-------------+----------+------------+--------+------------+
5 rows in set (0.01 sec)

mysql>
```

Create one more column address and print the address combining city, state and pin code.

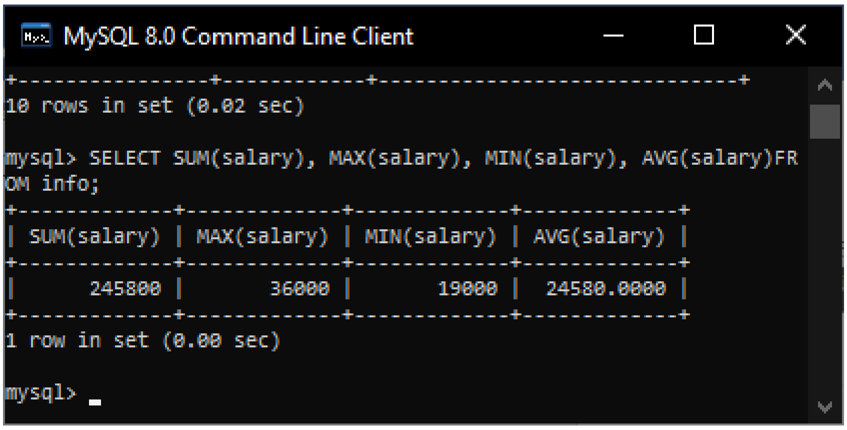
```
ALTER TABLE info
ADD COLUMN address VARCHAR(255);
UPDATE info
SET address = CONCAT(city, ', ', state, ', ', pin_code)
```



```
+----------------+------------+-------------------------------+
| Rakib          | Hasan      | Dhaka, NA, 2000               |
| Tanzimul Ayaan | Tanaf      | Mangalore, Karnataka, 575025  |
| Fabiha         | Smrity     | Tangail, NA, 1950             |
| Abdullah       | Al Mamun   | Kolkata, West Bengal, 202524  |
| Abdur          | Rahim      | Bangalore, Karnataka, 552025  |
| Tanvir         | Rahman     | Nagpur, Moharasto, 202478     |
| Attada         | Ramprashad | AA, UP, 275000                |
| Mansur         | Ali        | Bangalore, Karnataka, 220020  |
| ABC            | DEF        | Mangalore, Karnataka, 210120  |
| IJK            | LMN        | Mangalore, Karnataka, 225700  |
+----------------+------------+-------------------------------+
10 rows in set (0.02 sec)
```

Find the sum of salaries of all the lecturers in the table and find out minimum, maximum and average salary.

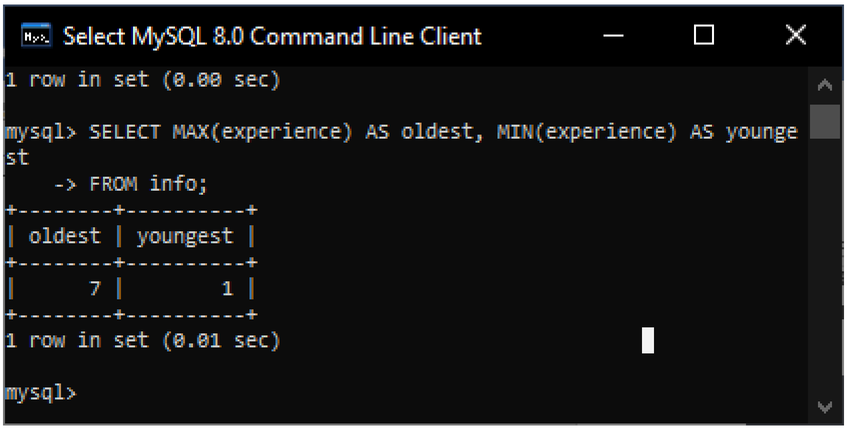
```
SELECT SUM(salary), MAX(salary), MIN(salary), AVG(salary)

FROM info;
```



```
+---------------+-----------+----------------------------+
10 rows in set (0.02 sec)

mysql> SELECT SUM(salary), MAX(salary), MIN(salary), AVG(salary)FR
OM info;
+-------------+-------------+-------------+-------------+
| SUM(salary) | MAX(salary) | MIN(salary) | AVG(salary) |
+-------------+-------------+-------------+-------------+
|      245800 |       36000 |       19000 |  24580.0000 |
+-------------+-------------+-------------+-------------+
1 row in set (0.00 sec)

mysql> _
```

Find out the youngest and oldest lecturer in your table.

```
SELECT MAX(experience) AS oldest, MIN(experience) AS youngest

FROM info;
```

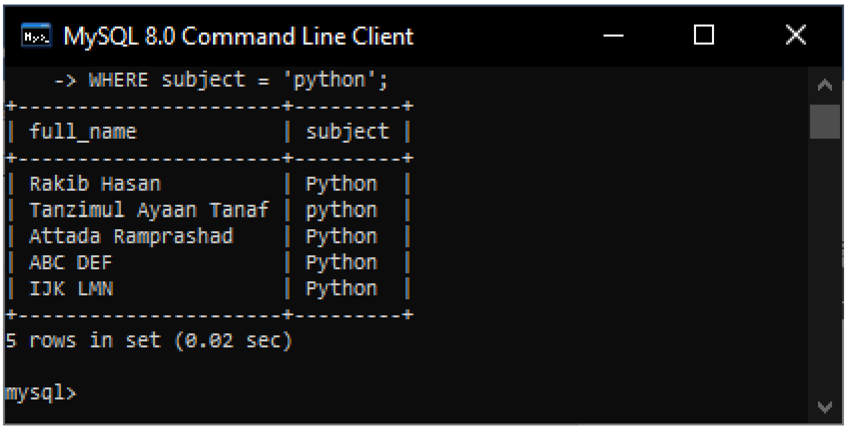


```
1 row in set (0.00 sec)

mysql> SELECT MAX(experience) AS oldest, MIN(experience) AS younge
st
    -> FROM info;
+--------+----------+
| oldest | youngest |
+--------+----------+
|      7 |        1 |
+--------+----------+
1 row in set (0.01 sec)

mysql>
```

One of the subject ‘C’ was replaced with ‘python’. Write a query to do the same in the table and also print the names of lecturers and their subject after replacement.

```
UPDATE info

SET subject = 'Python'

WHERE subject = 'c';

SELECT CONCAT(first_name, ' ', last_name) AS full_name,

    subject

FROM info
```

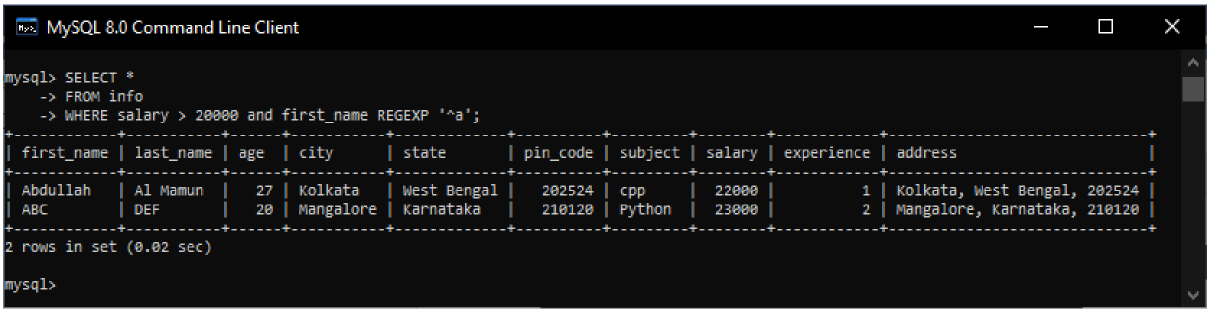
```
WHERE subject = 'python'
```



```
    -> WHERE subject = 'python';
+----------------------+---------+
| full_name            | subject |
+----------------------+---------+
| Rakib Hasan          | Python  |
| Tanzimul Ayaan Tanaf | python  |
| Attada Ramprashad    | Python  |
| ABC DEF              | Python  |
| IJK LMN              | Python  |
+----------------------+---------+
5 rows in set (0.02 sec)

mysql>
```

Write a query to retrieve the lecturers whose salary is greater than 20000 and name starts with ‘a’.

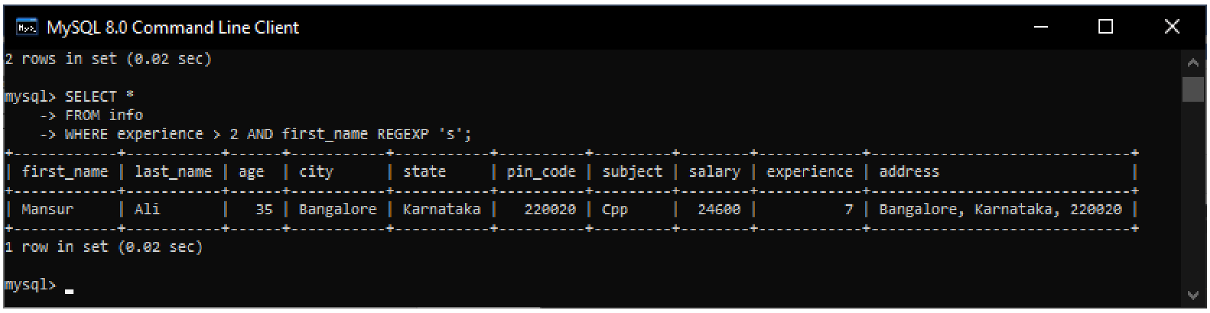
```
SELECT *
FROM info
WHERE salary > 20000 and first_name REGEXP '^a'
```



```
mysql> SELECT *
    -> FROM info
    -> WHERE salary > 20000 and first_name REGEXP '^a';
+------------+-----------+------+-----------+-------------+----------+---------+--------+------------+------------------------------+
| first_name | last_name | age  | city      | state       | pin_code | subject | salary | experience | address                      |
+------------+-----------+------+-----------+-------------+----------+---------+--------+------------+------------------------------+
| Abdullah   | Al Mamun  |   27 | Kolkata   | West Bengal |   202524 | cpp     |  22000 |          1 | Kolkata, West Bengal, 202524 |
| ABC        | DEF       |   20 | Mangalore | Karnataka   |   210120 | Python  |  23000 |          2 | Mangalore, Karnataka, 210120 |
+------------+-----------+------+-----------+-------------+----------+---------+--------+------------+------------------------------+
2 rows in set (0.02 sec)

mysql>
```

Write a query to retrieve the lecturers whose experience is above 2 years and first name has ‘s’.

```
SELECT *
FROM info
WHERE experience > 2 AND first_name REGEXP 's'
```



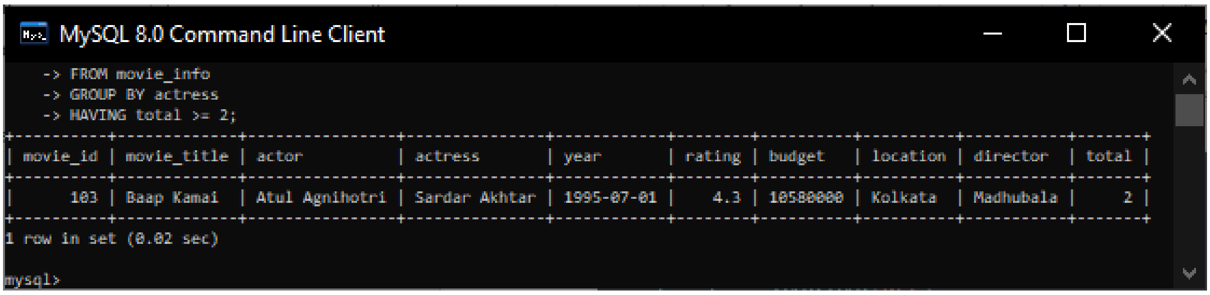
```
2 rows in set (0.02 sec)

mysql> SELECT *
    -> FROM info
    -> WHERE experience > 2 AND first_name REGEXP 's';
+------------+-----------+------+-----------+-----------+----------+---------+--------+------------+------------------------------+
| first_name | last_name | age  | city      | state     | pin_code | subject | salary | experience | address                      |
+------------+-----------+------+-----------+-----------+----------+---------+--------+------------+------------------------------+
| Mansur     | Ali       |   35 | Bangalore | Karnataka |   220020 | Cpp     |  24600 |          7 | Bangalore, Karnataka, 220020 |
+------------+-----------+------+-----------+-----------+----------+---------+--------+------------+------------------------------+
1 row in set (0.02 sec)

mysql> _
```

2. Create a database of movies consisting of movie_id, movie_title, actor, actress, year, rating (out of 5), budget, location and director.

```
CREATE DATABASE movies;
USE movies;
CREATE TABLE movie_info (
    movie_id INT NOT NULL,
    movie_title VARCHAR(255),
    actor VARCHAR(255),
    actress VARCHAR(255),
    year DATE,
    rating FLOAT,
    budget INT,
    location VARCHAR(255),
    director VARCHAR(255),
    PRIMARY KEY (movie_id));

INSERT INTO movie_info
    VALUES
    (101, 'Damayanti', 'Aamir Bashir', 'Fatma Begum', '1995-01-01', 4.9, 100000, 'London', 'Lalita Pawar'),
    (102, 'Kohinoor', 'Aftab Shivdasani', 'Fearless Nadia', '1999-07-01', 4.1, 1050000, 'Kolkata', 'Baap Kamai'),
    (103, 'Baap Kamai', 'Atul Agnihotri', 'Sardar Akhtar', '1995-07-01', 4.3, 10580000, 'Kolkata', 'Madhubala'),
    (104, 'Toofani Tiruni', 'Dulquer Salmaan', 'Sardar Akhtar', '1990-07-01', 4.5, 10480000, 'London', 'Kamini'),
    (105, 'Eye for an eye', 'Fardeen Khan', 'Shobhna Samarth', '1989-07-01', 4.7, 10800000, 'Karnatak', 'Madhubala')
```

Write a query to print the movies which have the same actress.

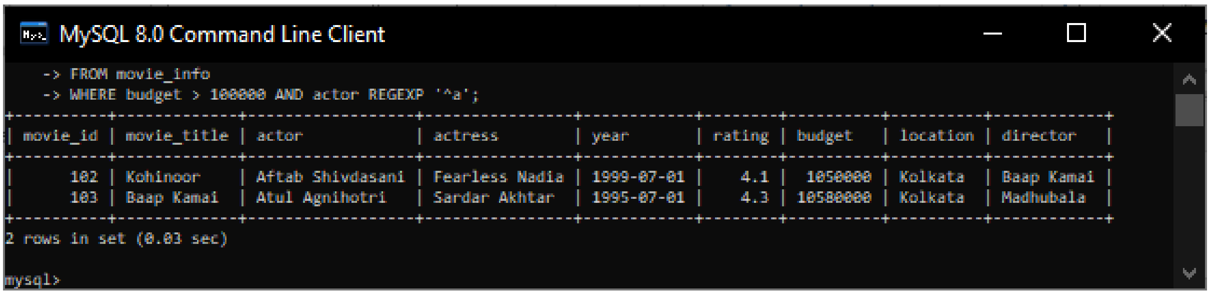
```
SELECT *, count(*) as total
FROM movie_info
GROUP BY actress
HAVING total >= 2
```



```
    -> FROM movie_info
    -> GROUP BY actress
    -> HAVING total >= 2;
+----------+-------------+----------------+---------------+------------+--------+----------+----------+-----------+-------+
| movie_id | movie_title | actor          | actress       | year       | rating | budget   | location | director  | total |
+----------+-------------+----------------+---------------+------------+--------+----------+----------+-----------+-------+
|      103 | Baap Kamai  | Atul Agnihotri | Sardar Akhtar | 1995-07-01 |    4.3 | 10580000 | Kolkata  | Madhubala |     2 |
+----------+-------------+----------------+---------------+------------+--------+----------+----------+-----------+-------+
1 row in set (0.02 sec)

mysql>
```

Write a query to print the movies with a budget greater than 100000 and has an actors name starting with A.

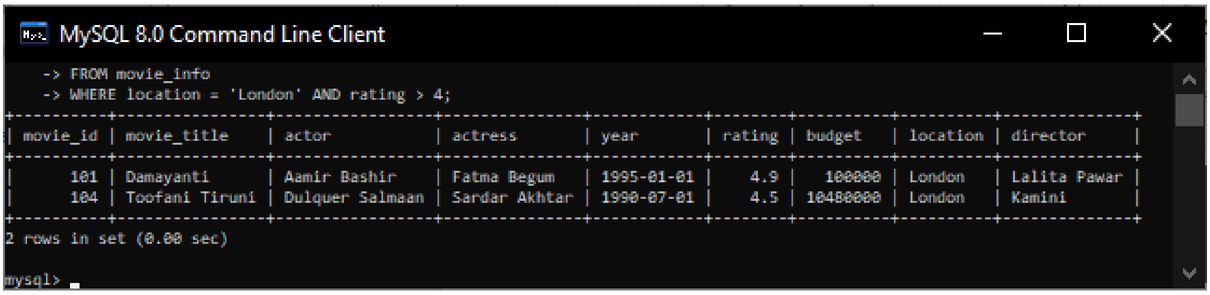
```
SELECT *
FROM movie_info
WHERE budget > 100000 AND actor REGEXP '^a'
```



```
    -> FROM movie_info
    -> WHERE budget > 100000 AND actor REGEXP '^a';
+----------+-------------+------------------+----------------+------------+--------+----------+----------+------------+
| movie_id | movie_title | actor            | actress        | year       | rating | budget   | location | director   |
+----------+-------------+------------------+----------------+------------+--------+----------+----------+------------+
|      102 | Kohinoor    | Aftab Shivdasani | Fearless Nadia | 1999-07-01 |    4.1 |  1050000 | Kolkata  | Baap Kamai |
|      103 | Baap Kamai  | Atul Agnihotri   | Sardar Akhtar  | 1995-07-01 |    4.3 | 10580000 | Kolkata  | Madhubala  |
+----------+-------------+------------------+----------------+------------+--------+----------+----------+------------+
2 rows in set (0.03 sec)

mysql>
```

Write a query to filter the movies which were shot in location London and have rating above 4.

```
SELECT *
FROM movie_info
WHERE location = 'London' AND rating > 4
```

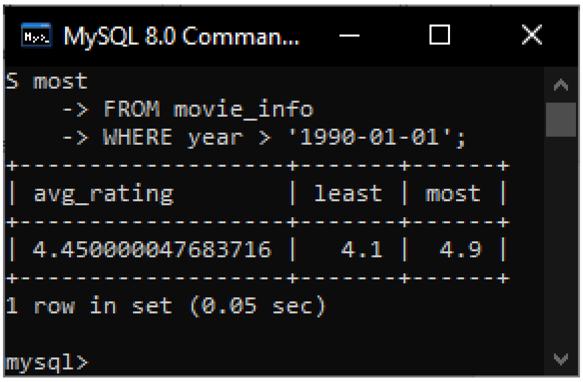


```
    -> FROM movie_info
    -> WHERE location = 'London' AND rating > 4;
+----------+----------------+-----------------+---------------+------------+--------+----------+----------+--------------+
| movie_id | movie_title    | actor           | actress       | year       | rating | budget   | location | director     |
+----------+----------------+-----------------+---------------+------------+--------+----------+----------+--------------+
|      101 | Damayanti      | Aamir Bashir    | Fatma Begum   | 1995-01-01 |    4.9 |   100000 | London   | Lalita Pawar |
|      104 | Toofani Tiruni | Dulquer Salmaan | Sardar Akhtar | 1990-07-01 |    4.5 | 10480000 | London   | Kamini       |
+----------+----------------+-----------------+---------------+------------+--------+----------+----------+--------------+
2 rows in set (0.00 sec)

mysql> _
```

Print the average rating of the movies released after 1990 and find the most and least rated movie.

```
SELECT AVG(rating) as avg_rating, MIN(rating) AS least, MAX(rating) AS
most
FROM movie_info
```

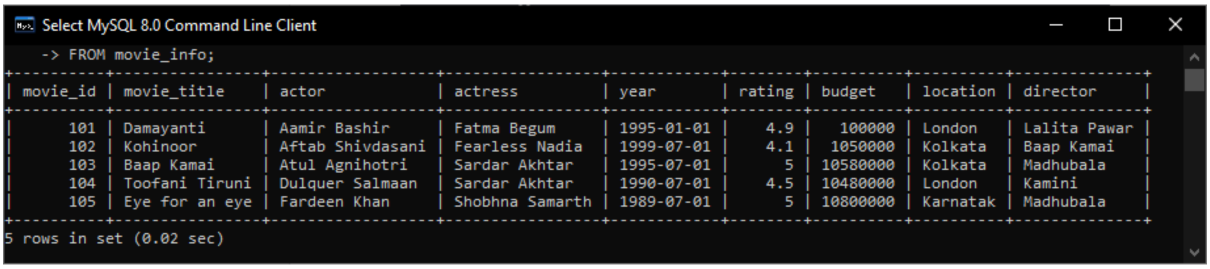
```
WHERE year > '1990-01-01'
```



```
S most
    -> FROM movie_info
    -> WHERE year > '1990-01-01';
+-------------------+-------+------+
| avg_rating        | least | most |
+-------------------+-------+------+
| 4.450000047683716 |   4.1 |  4.9 |
+-------------------+-------+------+
1 row in set (0.05 sec)

mysql>
```

Update the rating of the movie directed by a particular director with 5 ratings.

```
UPDATE movie_info
SET rating = 5
WHERE director = 'Madhubala';
SELECT *
FROM movie_info;
```

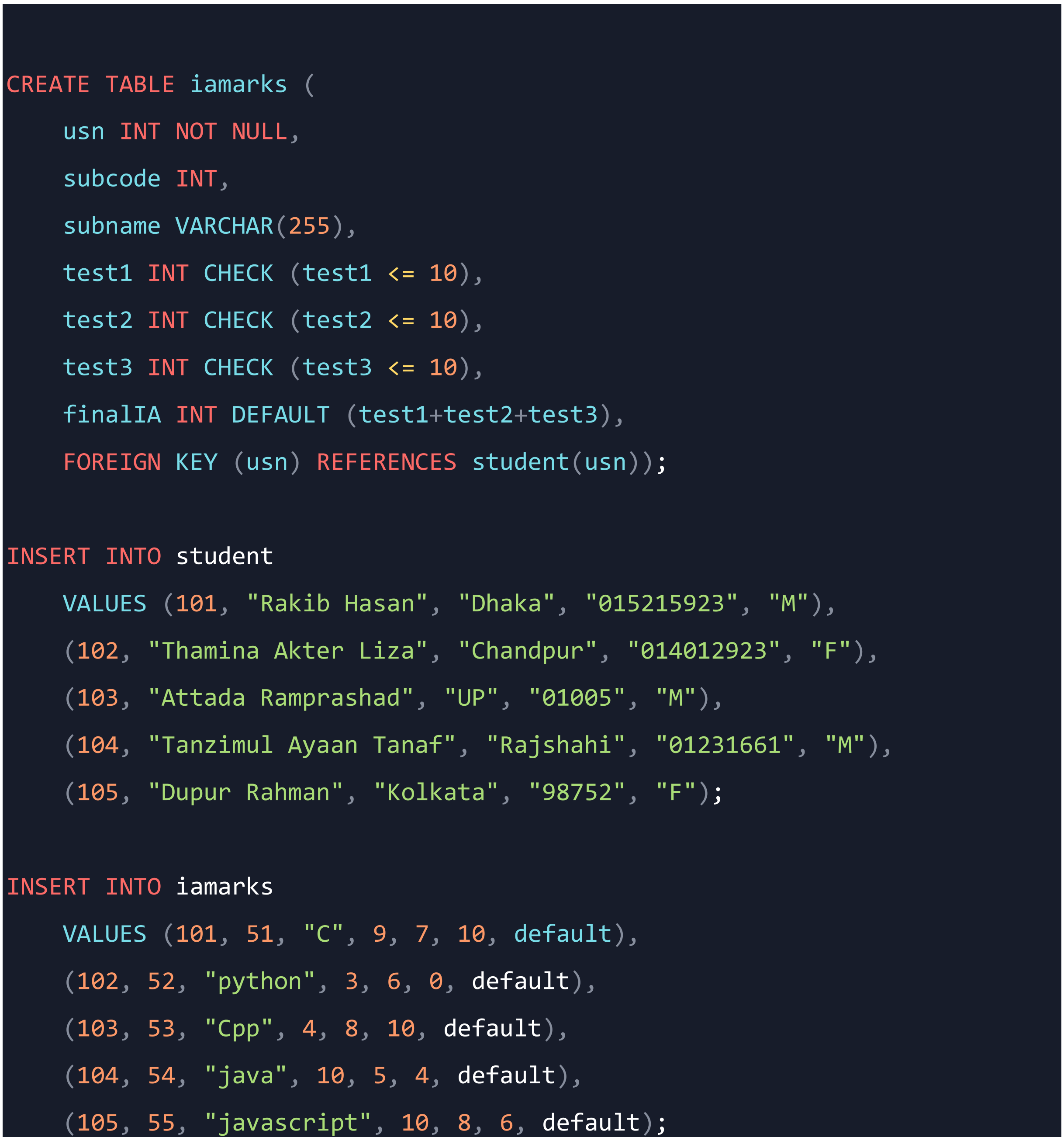


```
    -> FROM movie_info;
+----------+----------------+-------------------+-----------------+------------+--------+----------+----------+--------------+
| movie_id | movie_title    | actor             | actress         | year       | rating | budget   | location | director     |
+----------+----------------+-------------------+-----------------+------------+--------+----------+----------+--------------+
|      101 | Damayanti      | Aamir Bashir      | Fatma Begum     | 1995-01-01 |    4.9 |   100000 | London   | Lalita Pawar |
|      102 | Kohinoor       | Aftab Shivdasani  | Fearless Nadia  | 1999-07-01 |    4.1 |  1050000 | Kolkata  | Baap Kamai   |
|      103 | Baap Kamai     | Atul Agnihotri    | Sardar Akhtar   | 1995-07-01 |      5 | 10580000 | Kolkata  | Madhubala    |
|      104 | Toofani Tiruni | Dulquer Salmaan   | Sardar Akhtar   | 1990-07-01 |    4.5 | 10480000 | London   | Kamini       |
|      105 | Eye for an eye | Fardeen Khan      | Shobhna Samarth | 1989-07-01 |      5 | 10800000 | Karnatak | Madhubala    |
+----------+----------------+-------------------+-----------------+------------+--------+----------+----------+--------------+
5 rows in set (0.02 sec)
```

3. Create a student grading database system consisting of:

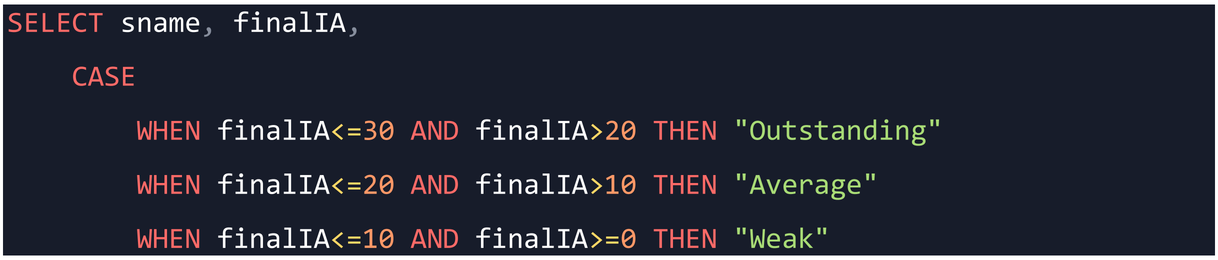
STUDENT(USN, SName, Address, Phone, Gender)
IAMARKS(USN, Subcode, Subject name, Test1, Test2, Test3, FinalIA)
(Each test is of 10, hence Final IA is of 30)

```
CREATE DATABASE student_grade;
USE student_grade;
CREATE TABLE student (
    usn INT NOT NULL,
    sname VARCHAR(255),
    address VARCHAR(255),
    phone VARCHAR(20),
    gender VARCHAR(2),
    PRIMARY KEY (usn));
```

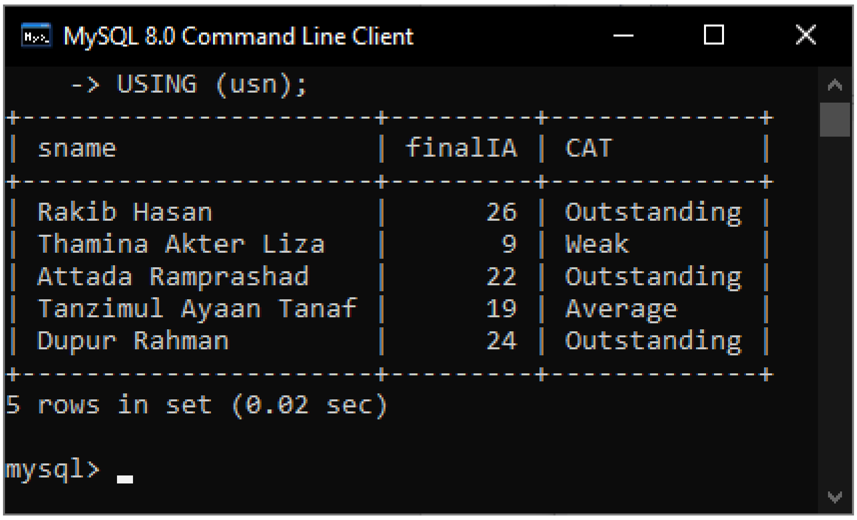


```
CREATE TABLE iamarks (
    usn INT NOT NULL,
    subcode INT,
    subname VARCHAR(255),
    test1 INT CHECK (test1 <= 10),
    test2 INT CHECK (test2 <= 10),
    test3 INT CHECK (test3 <= 10),
    finalIA INT DEFAULT (test1+test2+test3),
    FOREIGN KEY (usn) REFERENCES student(usn));

INSERT INTO student
    VALUES (101, "Rakib Hasan", "Dhaka", "015215923", "M"),
    (102, "Thamina Akter Liza", "Chandpur", "014012923", "F"),
    (103, "Attada Ramprashad", "UP", "01005", "M"),
    (104, "Tanzimul Ayaan Tanaf", "Rajshahi", "01231661", "M"),
    (105, "Dupur Rahman", "Kolkata", "98752", "F");

INSERT INTO iamarks
    VALUES (101, 51, "C", 9, 7, 10, default),
    (102, 52, "python", 3, 6, 0, default),
    (103, 53, "Cpp", 4, 8, 10, default),
    (104, 54, "java", 10, 5, 4, default),
    (105, 55, "javascript", 10, 8, 6, default);
```

Categorize students based on the following criterion and print the table by adding a category column in the student table.
If FinalIA = 30 to 20 then CAT = 'Outstanding'
If FinalIA = 20 to 10 then CAT = 'Average'
If FinalIA <10 then CAT = 'Weak'



```
SELECT sname, finalIA,
    CASE
        WHEN finalIA<=30 AND finalIA>20 THEN "Outstanding"
        WHEN finalIA<=20 AND finalIA>10 THEN "Average"
        WHEN finalIA<=10 AND finalIA>=0 THEN "Weak"
        ELSE "NA"
    END AS CAT
FROM student
JOIN iamarks
    USING (usn)
```



```
    -> USING (usn);
+----------------------+---------+-------------+
| sname                | finalIA | CAT         |
+----------------------+---------+-------------+
| Rakib Hasan          |      26 | Outstanding |
| Thamina Akter Liza   |       9 | Weak        |
| Attada Ramprashad    |      22 | Outstanding |
| Tanzimul Ayaan Tanaf |      19 | Average     |
| Dupur Rahman         |      24 | Outstanding |
+----------------------+---------+-------------+
5 rows in set (0.02 sec)

mysql> _
```